

R E M A R K S

Reconsideration of this application, as amended, is respectfully requested.

THE CLAIMS

Claim 45 has been amended to clarify the feature of the present invention whereby a ratio of a sectional height of the tire with respect to a width of the tire is set to 15 to 80%, and a ratio of a height of a base rubber layer to the sectional height of the tire is set to 10 to 30%, as supported by the disclosure in the specification at paragraphs [0017] and [0018].

In addition, claim 45 has been amended to clarify the feature of the present invention whereby a depth of each of the holes is approximately one-fourth of the width of the tire in a width direction of the tire, as supported by the disclosure in the specification at paragraph [0019].

Still further, claim 45 has been amended to clarify the feature of the present invention whereby a plurality of reinforcing core materials, which are oriented towards the circumferential direction of the tire, are embedded inside the base rubber layer of the tire at even intervals of 10mm or less in a width direction of the tire, and whereby the reinforcing core materials adhere to the base rubber layer by adhesive and by means of plating applied to the reinforcing core materials, as

supported by the disclosure in the specification at paragraph [0020].

Yet still further, claim 45 has been amended to incorporate the subject matter of claim 47, whereby a number of projections are formed to project sideways on an inner circumferential side of both of the side surface of the tire for abutting against rim flanges of a wheel.

And finally, claim 45 has also been amended to delete the recitation that the cushion tire comprises a rib-lug-type tread pattern formed in an outer circumferential surface of the tire, in order to overcome the rejections under 35 USC 112.

No new matter has been added, and it is respectfully requested that the amendments to the claims be approved and entered and that the rejections under 35 USC 112 be withdrawn.

THE PRIOR ART REJECTION

Claims 45-48 were rejected under 35 USC 103 as being obvious in view of various combinations of WO 97/18959 ("Chandler et al") with one or more of WO 96/05917 ("Haydon et al"), Des. 153,431 ("Hawkinson"), USP 649,775 ("Sweet") and USP 597,313 ("Carmont"). These rejections, however, are respectfully traversed with respect to claims 45 and 46 as amended hereinabove.

On pages 3-4 of the Office Action, the Examiner argues that Chandler et al discloses the features of the present invention

recited in claim 1 relating to the width direction tread grooves and the number of holes formed in both side surfaces of the tire.

It is respectfully pointed out, however, that according to the present invention as recited in amended claim 45, a depth of each of the holes is approximately one-fourth of the width of the tire in a width direction of the tire. In this connection, it is noted that since a planiform tire, such as the tire of the claimed present invention, has a low sectional height, holes formed in the tire are easily deformed when the tire is grounded. This deformation creates wrinkling of the tire, which causes the tire to develop flex cracks, resulting in a low flexional durability of the tire. However, since the depth of the holes in the side surfaces of the tire is only one fourth of the width of the tire according to the present invention as recited in amended claim 45, the tire is prevented from wrinkling. The flexional durability of the tire is thereby improved.

By contrast, it is respectfully pointed out that the holes disclosed in Chandler et al extend across at least one third of the tire width (see Fig. 10).

On page 4 of the Office Action, the Examiner acknowledges that Chandler et al does not disclose small-sized grooves. For this reason, the Examiner has cited Haydon et al, and optionally Hawkinson, to supply this missing teaching of Chandler et al. However, it is respectfully submitted that Haydon et al and

Hawkinson also do not disclose, teach or suggest the small-sized grooves of the claimed present invention.

According to the present invention as recited in claim 45, a small-sized groove is formed at a position between each of the adjacent tread grooves in the circumferential surface of the tire and corresponding to each of the holes, and each of the small-sized grooves is formed parallel to the tread grooves and has a size smaller than a size of the tread grooves and a depth shallower than a depth of the tread grooves. According to this feature of the present invention, severe wearing of the tire due to the "unsymmetrical wearing" phenomenon can be prevented. In addition, since each of the small-sized grooves is formed at a position corresponding to each of the holes, deformation of the hole, which arises and is easily increased when a planiform tire having holes such as the tire according to the present invention is grounded, is mitigated or absorbed by a deformation of the small-sized groove. As a result, the deformation of hole is reduced, so that a fissure of the hole is prevented.

By contrast, it is respectfully submitted that Haydon et al does not disclose that the cavities 25 are provided in any corresponding relationship with the tread grooves. And it is respectfully pointed out that Hawkinson does not even disclose holes provided in the side surfaces of the tire. Therefore, it is respectfully submitted that Haydon et al and Hawkinson do not

disclose, teach or suggest the feature of the present invention whereby small-sized grooves are formed at positions corresponding to each of the holes in the side surfaces of the tire, in the manner of the present invention as recited in amended claim 45.

Conventionally, degradation of the riding feeling of a planiform pneumatic tire during vehicle running caused by making the tire's inner circumferential space enlarged is prevented by forming a number of holes in the side surfaces. Therefore, the ratio of the height of the base rubber layer to the tire sectional height has to be set as small as 10 to 30% so that the height of the tread rubber layer formed with the holes is similar to that of a conventional example. However, the low height of the base rubber layer influences a displacement of the rim relative to the tire.

According to the present invention as recited in amended claim 45, the displacement of the rim relative to the tire is prevented by (i) setting a ratio of a sectional height of the tire with respect to a width of the tire to 15 to 80%, and a ratio of a height of a base rubber layer to the sectional height of the tire is set to 10 to 30%; (ii) embedding a plurality of reinforcing core materials, which are oriented towards the circumferential direction of the tire, inside the base rubber layer of the tire at even intervals of 10mm or less in a width direction of the tire, wherein the reinforcing core materials

adhere to the base rubber layer by adhesive and by means of plating applied to the reinforcing core materials; (iii) forming a number of projections to project sideways on an inner circumferential side of both of the side surface of the tire for abutting against rim flanges of a wheel. The combination of these features makes it possible to form the holes in a planiform pneumatic tire by preventing the displacement of the rim relative to the tire, resulting in a good riding feeling and a large inner circumferential space of the rim wheel.

It is respectfully submitted that Chandler et al, Haydon et al and Hawkinson do not disclose, teach or suggest the above described features of the claimed present invention.

In addition, it is respectfully submitted that Carmont, which the Examiner argues discloses the projections of the claimed present invention, does not in fact disclose, teach or suggest the feature of the present invention whereby a number of projections are formed to project sideways on an inner circumferential side of both of the side surface of the tire for abutting against rim flanges of a wheel. As described above, this feature of the present invention is useful in preventing displacement of the rim relative to the tire. In addition, the projections of the claimed present invention also prevent the edges of the holes from abutting against the rim flange and wearing when the holes overlap with the rim flange.

By contrast, Carmont discloses that rectangular shaped excrescences D project from the tire and fit into slot-apertures in the side wings of the tire rim. It is respectfully submitted, therefore, that the excrescences D of Carmont do not abut against rim flanges of a wheel. And it is respectfully submitted that since the excrescences of Carmont fit into the apertures of the tire rim, these excrescences cannot be applied to a conventional tire with holes in the side walls to prevent the holes from rubbing against the rim flange, in the manner of the claimed present invention.

In view of the foregoing, it is respectfully submitted that the present invention as recited in amended claim 45, as well as amended claim 46 depending therefrom, clearly patentably distinguishes over Chandler et al, Haydon et al, Hawkinson, and Carmont, taken singly or in any combination under 35 USC 103.

It is respectfully submitted, moreover, that none of the other prior art of record disclose, teach or suggest the distinguishing features of the present invention as recited in amended claim 45.

For example, it is respectfully submitted that USP 4,226,273 ("Long et al") does not disclose, teach or suggest that the tire is a planiform tire and that the reinforcing core materials adhere to the base rubber layer.

In addition, it is respectfully submitted that JP 2000-25410 ("Tanemura") and USP 5,579,818 ("Hoppenheit et al") do not disclose, teach or suggest that a tire including holes.

Still further, it is respectfully submitted that USP 1,237,227 ("Swartz") does not disclose, teach or suggest a planiform tire.


In view of the foregoing, it is respectfully submitted that amended claims 45 and claim 46 patentably distinguish over all of the prior art references of record under 35 USC 103.

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Entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,


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